

Printed Pages : 4



ECE012

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 100652

Roll No.

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B. Tech.

(SEM. VI) THEORY EXAMINATION, 2014-15
MATRIX ANALYSIS OF STRUCTURES

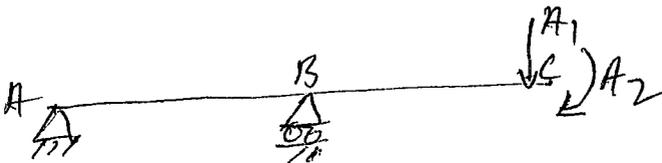
Time : 3 Hours]

[Total Marks : 100

- Note :**
- (1) Attempt all the questions.
 - (2) Each question carry equal marks.

1 Attempt any four questions of the following : **4×5=20**

- (a) What do you understand by Kinematic indeterminacy ? Explain with example.
- (b) Explain flexibility method and generate displacement equations.
- (c) Generate displacement equations for temperature changes in the beam.
- (d) Describe physical significance of flexibility and stiffness coefficients for the following beam subjected to loads A_1 and A_2 .

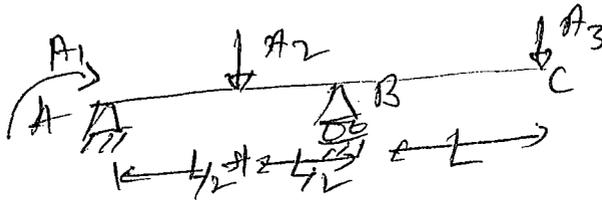


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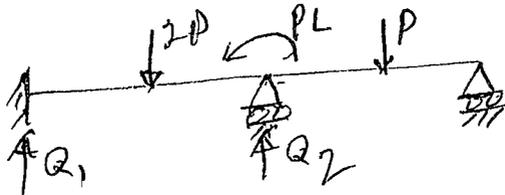
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- (e) The following overhang beam is subjected to loads A_1 , A_2 and A_3 . Determine displacements D_{11} , D_{22} and D_{33} $EI = \text{Constant}$

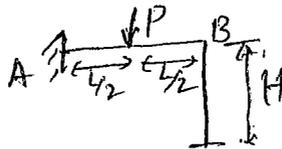


2 Attempt any two questions of the following : $2 \times 10 = 20$

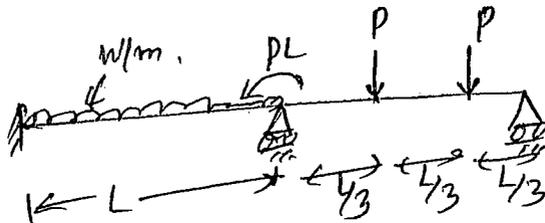
- (a) Use flexibility method and determine Q_1 and Q_2 in the following beam.



- (b) Determine the flexibility coefficients in the following frame.

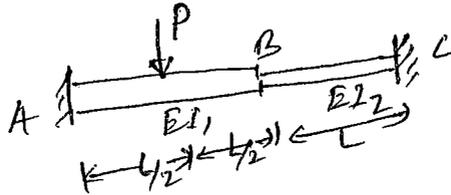


- (c) Calculate the equivalent joint load in the following beam.

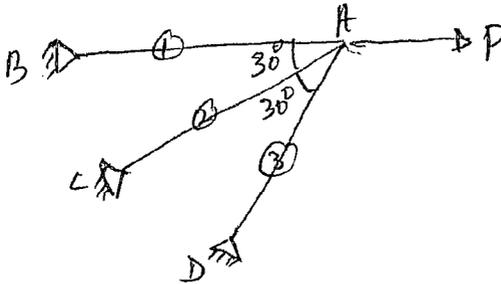


3 Attempt any two of the following : 2×10=20

- (a) Find the reaction at support 'A' and 'C' for the beam with fixed ends. Assume $EI_1 = 2EI$, $EI_2=EI$.



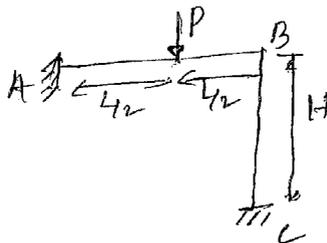
- (b) Find the axial forces in all bars of the truss, neglect the self weight of the bars, each bar has length 'L' and axial rigidity 'EA'.



- (c) Derive displacement matrix for a plane truss

4 Attempt any one of the following : 1×20=20

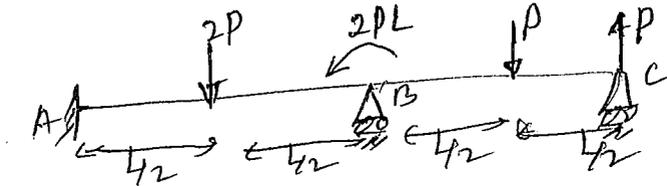
- (a) Use flexibility method and determine the member end action in the following frame.



- (b) Generate stiffness matrix (all) for a space frame member.

5 Attempt any one of the following : $1 \times 20 = 20$

- (a) Using stiffness matrix method and determine the member end actions in the following beam.



- (b) With a flow chart for the computer programme to analyze plane frame.
